



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/578,267

05/04/2006

Tetsuro Otsuka

Q94679

2092

23373 7590 08/21/2007  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

NGUYEN, KHAI M

ART UNIT

PAPER NUMBER

2819

MAIL DATE

DELIVERY MODE

08/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

TH

# Office Action Summary

Application No.

10/578,267

Applicant(s)

OTSUKA ET AL.

Examiner

Khai M. Nguyen

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5 and 7 is/are rejected.
- 7) ☒ Claim(s) 2, 4, 6, 8, and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/4/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/4/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

2. An initiated copy of the information disclosure statement (IDS) submitted on May 4, 2006 is attached herewith.

### *Specification*

3. Continuation data should be added to the first paragraph of the specification.
4. The application has not been checked to the extent necessary to determine the presence of all possible typographical and grammatical errors. However, Applicant's cooperation is requested in correcting any errors of which he/she may become aware in the application.

### *Drawings*

5. **Figures 1-5** should be designated by a legend such as --**Prior Art**-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

6. Claims 1-8 are objected to because of, from reading the claims, the recited phrase "wherein the control apparatus" is unclear and/or lacks antecedent basis.

Clarification is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 3, 5, and 7 are rejected under 35 U.S.C. 102(a) as being anticipated by applicants admitted prior art [hereinafter, APA], Figs. 1-5.

Regarding claim 1, the APA discloses (see, Fig. 1-4) a control unit (Fig. 2) for electric power steering apparatus (Fig. 1) provided with an angle detecting device (10 of Fig. 2 – paragraph [0008], lines 1-3) which supplies a carrier wave signal ( $\sin \omega t$ ) constituted by a predetermined frequency (see, Fig. 4) and generates a sin signal ( $\sin \omega t * \sin \theta$ ) having a wave shape (see, Fig. 4) obtained by modulating (see, Fig. 4 and paragraph [0010]) an amplitude of said carrier wave signal by  $\sin \theta$  and a cos signal ( $\sin \omega t * \cos \theta$ ) having a wave shape (see, Fig. 4) obtained by modulating the amplitude by  $\cos \theta$  (see, [0010]), for detecting a rotation angle  $\theta$  of the motor ([0008]) necessary for the control for applying a steering assist force by the motor to a steering system of a vehicle ([0002]),

wherein the control apparatus (Fig. 2) is provided with an abnormal region judging map (region that with  $1 < P < 0.9$ ; [0011]; [0051]) constituted by two values (sin and cos) comprising a value corresponding to said  $\sin \theta$  and a value corresponding to said  $\cos \theta$  and constituted by a normal region ( $0.9 < P < 1$ ) and an abnormal region ( $1 < P < 0.9$ ), and judges an abnormality of said angle detecting device by mapping (i.e., judge or compare or determine) said  $\sin \theta$  and said  $\cos \theta$  respectively calculated from said sin signal and said cos signal to said abnormal region judging map ([0011], [0050]-[0053]).

Regarding claim 2, the APA discloses (see, Fig. 1-4) a control unit for electric power steering apparatus (Fig. 1) as claimed in claim 1, wherein the control apparatus (Fig. 2) detects said  $\sin \theta$  and said  $\cos \theta$  in synchronous with said carrier wave signal ([0010]-[0011]; Fig. 4).

Regarding claim 5, the APA discloses (see, Fig. 1-4) a control unit (Fig. 2) for electric power steering apparatus (Fig. 1) provided with an angle detecting device (10 of Fig. 2 – paragraph [0008], lines 1-3) which supplies a carrier wave signal ( $\sin \omega t$ ) constituted by a predetermined frequency (see, Fig. 4) and generates a sin signal ( $\sin \omega t * \sin \theta$ ) having a wave shape (see, Fig. 4) obtained by modulating (see, Fig. 4 and paragraph [0010]) an amplitude of said carrier wave signal by  $\sin \theta$  and a cos signal ( $\sin \omega t * \cos \theta$ ) having a wave shape (see, Fig. 4) obtained by modulating the amplitude by  $\cos \theta$  (see, [0010]), for detecting a rotation angle  $\theta$  of the motor ([0008]) necessary for

Art Unit: 2819

the control for applying a steering assist force by the motor to a steering system of a vehicle ([0002]),

wherein the control apparatus (Fig. 2) is provided with an angle processing means (angular resolver 10 and RDC 14) respectively detecting the sin angle signal ( $\sin \theta$ ) and the cos angle signal ( $\cos \theta$ ) from said sin signal and said cos signal, and outputting a rotation angle signal  $\theta$  formed by a signal formed by said cos angle signal and a signal formed by said sin angle signal, and said motor (motor 108 of Fig. 2) is controlled on the basis of said rotation angle signal  $\theta$  ([0008]).

Regarding claim 7, the APA discloses (see, Fig. 1-4) the control unit (Fig. 2) for electric power steering apparatus (Fig. 1) as claimed in claim 5, wherein the control apparatus (Fig. 2) detects said sin angle signal and said cos angle signal from said sin signal and said cos signal respectively in synchronous with said carrier wave ([0010]-[0011]; Fig. 4).

***Allowable Subject Matter***

8. Claims 2, 4, 6, 8, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the references of record, which reviewed and considered, neither reveal nor render obvious the recited combinations including the normal region of claim 2, and the angle detecting process circuit of claim 4.

Art Unit: 2819

***Prior Art***


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure (notes: all references cited on PTO-892 Form attached herewith).

***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The examiner can normally be reached on 9:00 - 5:30 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford (Rex) Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
August 19, 2007

Khai M. Nguyen  
Art Unit: 2819  
571-272-1809